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Strategic Plan:

ALDO LEOPOLD



WILDERNESS RESEARCH

INSTITUTE

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Preface

The Strategic Plan for the Aldo Leopold Wilderness Research Institute represents an intensive effort to evaluate strategic issues related to the future understanding and management of wilderness resources and values, and to the role the Leopold Institute might play in furthering these needs. It presents a strategy for interagency scientific leadership in the conduct and application of research necessary to improve the management of wilderness and other natural areas. The Plan presents a model for the type of interagency cooperation and interdisciplinary research that is increasingly essential in today's world of government downsizing and fiscal constraint.

The term "wilderness" as used in this document refers to lands specifically designated as Wilderness by the Congress of the United States by the 1964 Wilderness Act or by succeeding legislation, as well as other wildlands or natural areas managed largely for their natural values.

The Leopold Institute would not exist without the talents, knowledge, and innovative ideas from its extraordinary staff:

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Strategic Plan: Aldo Leopold Wilderness Research Institute

Introduction

The Aldo Leopold Wilderness Research Institute was dedicated by the U.S. Forest Service in August 1993 to provide coordination and direction to ecological and human dimensions research relevant to the understanding and management of wilderness and other protected areas. Located on the campus of the University of Montana, the Leopold Institute evolved from the Forest Service Intermountain Research Station's Wilderness Management Research Work Unit. The Leopold Institute is supported by an Interagency Agreement among the Federal agencies having wilderness responsibility—the Forest Service, Bureau of Land Management, National Park Service, Fish and Wildlife Service, and National Biological Service.

In developing a wilderness research program, we have recognized that wilderness can mean different things to different people. Wilderness can refer to lands designated or managed for the purpose of preserving natural conditions; for providing opportunities for solitude or primitive and unconfined recreation; and for their scientific, educational, scenic, cultural, and historic values. Wilderness can also refer more broadly to conditions offering personal opportunities for challenge, escape, or spiritual growth. The research and applications program of the Leopold Institute includes the breadth of these meanings.

This document is the product of a strategic planning process undertaken by the Leopold Institute during 1995. This process included a thorough review of issues related to wilderness research and management, as well as an assessment of roles the Institute might play in furthering the conduct and application of science as it applies to the understanding and management of wilderness, parks, and other natural areas. The resulting Strategic Plan is a visionary statement of what the Aldo Leopold Wilderness Research Institute aims to be, what it proposes to do, and how its programs would be accomplished. The Plan presents a model for interagency cooperation in the development and application of research information necessary to assure the long-term sustainability of wilderness resources and values.

The Plan begins with a statement of Context that discusses relevant societal trends. This is followed by a Vision statement that articulates the importance of wilderness and the understanding and management of wilderness ecosystems and values. A Mission statement and articulation of Core Values and Principles, and Unique Assets provide the context from which Goals are derived. A discussion of Program Components includes sections on research, applications, priority issues, and cooperative and partnership activities. Organizational Structure, Support, and Oversight discussions provide details on staffing and budget as well as the role of the interagency Steering Committee. A discussion on Implementation Strategies and Strategic Challenges recognizes the challenges of achieving the Institute's goals during a time of government downsizing and reduced fiscal resources.

Context

In our efforts to define the scope and programs of the Aldo Leopold Wilderness Research Institute, we examined a number of societal trends with relevance to wilderness and wilderness research. We feel the following trends have the most relevance to wilderness research:

1. The population of the United States is continually expanding, introducing greater development pressures on undeveloped lands and making opportunities for enjoyment of solitude and natural surroundings more scarce.
2. The size of the undeveloped land base is shrinking, leaving wilderness and other natural areas as isolated fragments of increased importance for scientific study, education, recreation, and protection of natural systems.
3. We expect to see continued shifts in cultural diversity, with accompanying shifts in the perception of and social meanings attached to wilderness.
4. Established wildernesses face increasing threats to their naturalness due to such factors as air pollution, exotic species, and recreation use.
5. Recreational use of wilderness is increasing in many places.
6. Society is increasingly divided on issues regarding appropriate uses of natural resources.
7. Increasing demands for increasingly limited resources have magnified the importance of scientifically sound data on which to make management decisions.
8. There is increasing recognition that the preservation of wilderness values and attributes requires active management actions to mitigate or reverse effects of anthropogenic influences such as fire suppression and the spread of alien plants and animals.
9. Management agencies and professional scientific societies are recognizing the importance of improved communication between scientists and managers regarding the application of research to management and policy questions.
10. Demands to decrease Federal expenditures in all areas will place increasing pressure on the wise and effective use of fiscal resources.

Vision

The vision of the Aldo Leopold Wilderness Research Institute and its supporting agencies is to be recognized as the focal point for the development and application of information necessary to understand and manage wilderness ecosystems. It provides a national center for scientists from different disciplines and backgrounds to address the wilderness research needs of land management agencies and organizations. We are dedicated to providing the quality, peer-reviewed research necessary to develop policy guidelines and management practices that assure that sustainable wild ecosystems and their benefits and values endure for generations to come.

Mission

The mission of the Aldo Leopold Wilderness Research Institute is to provide scientific leadership in developing and using the knowledge needed to sustain wilderness ecosystems and values.

Core Values and Guiding Principles

We hold the core values of quality, credibility, integrity, and responsiveness as the basis for all of our activities. We will be guided by these core values as well as the following principles:

1. Be responsive to the spirit and letter of the Wilderness Act and to the laws and policies governing wilderness management agencies.
2. Strive to meet the needs of wilderness managers, scientists, and interested publics by obtaining their views on high priority issues and by reaching out to them with our technology transfer and application efforts.
3. Maintain high professional standards and credibility for the research that we conduct and facilitate.
4. Maximize research productivity by using diverse and creative approaches, emphasizing research with broad applicability, and focusing on high priority issues.
5. Provide regional, National, and international leadership to wilderness research and to the application of that research to management.
6. Encourage further communication, coordination, and collaboration among wilderness management agencies and among scientists who study wilderness values and attributes.
7. Provide a creative and supportive work environment where dignity, respect, trust, and fairness encourage a team approach to all activities.

Unique Assets

The programs of the Aldo Leopold Wilderness Research Institute are shaped by our core values and guiding principles, and by our strengths for identifying and exploring complex, long-term natural and social resource problems in wilderness and related natural areas. We have:

- A multidisciplinary staff of scientists and collaborators who are recognized leaders in their fields.
- An established reputation as national and international leaders in wilderness recreation and its management and in understanding human use and values associated with wilderness.
- Responsibility for knowledge about diverse natural ecosystems, ranging from hot deserts to high mountains, including aquatic and terrestrial systems.
- Support and participation from five Federal wilderness agencies—Forest Service, Bureau of Land Management, National Park Service, Fish and Wildlife Service, and National Biological Service.
- Cooperative working arrangements with universities, Federal agencies, and nongovernment organizations.

Goals

The Aldo Leopold Wilderness Research Institute is guided by the following goals:

- To develop the knowledge needed to protect and preserve wilderness and the ecological and social values derived from wilderness.
- To communicate and apply this knowledge to the wilderness management agencies and other user groups.

Program Components

The Aldo Leopold Wilderness Research Institute activities include cooperative and partnership programs, emphasizing both research and management application of research findings.

Research

The conduct and support of peer-reviewed, scientifically rigorous research forms the research core of the Leopold Institute. Scientific expertise from various agencies, universities, and other sources are coordinated to produce state-of-the-art knowledge about wilderness resources and the human uses and values associated with those resources. The Institute's research staff conducts, coordinates, and facilitates research that improves basic understanding of wilderness and is responsive to the needs and priorities of the wilderness management agencies. Research activities include in-house, cooperative, and contract studies.

Dissemination of Findings—Technical, peer-reviewed publications are fundamental to the research process. Research supported by the Leopold Institute is presented at meetings and workshops, and findings are published in scientific journals, agency series publications, symposia, and workshop proceedings. Scientists at the Institute help enable dissemination of findings by serving as reviewers, editors, and symposia and conference chairs.

Scope of Subject Matter—Research conducted or supported by the Leopold Institute must be important to the understanding and preservation of wilderness ecosystems and associated human experiences and values. This includes a broad range of topics and disciplines, including studies related to the value of wilderness to ecosystem management, regional ecosystem sustainability, and general societal well-being. Both natural and social sciences will be addressed by the Institute programs.

Applications

An important function of the Leopold Institute is to assure that research information is readily available and useful to managers, educators, policymakers, user groups, and other scientists. This requires effective communication and coordination between scientists and managers.

The applications function of the Institute emphasizes communication of wilderness research findings and activities, and provides information, reference services, technical advice and assistance, and extension and outreach activities. Examples of possible activities include the development of information sources such as databases, bibliographies, and libraries on wilderness knowledge and research activities; translation of research findings into forms that are more easily understandable to those without a scientific background; development and implementation of protocols; conduct of or participation in workshops, site visits and training sessions; and development of partnerships between scientists and the users of research information. Cooperative ventures with the Arthur Carhart National Wilderness Training Center will receive particular emphasis.

Priority Issues

A comprehensive issue identification and prioritization process was carried out during 1995 to identify core research issues that would form the focus of the Leopold Institute's initial research efforts. Potential issues were placed into three priority classes, or tiers, on the basis of overall importance of the issue and of the ability of the Institute to effectively make a contribution.

Tier One Priority Issues—These issues will receive the most immediate attention for evaluating their feasibility for development into full Institute research programs.

- Understanding the effects of recreation use and recreation management strategies on wilderness attributes and visitor experiences.
- Understanding natural disturbance regimes and the effects of their alteration by human actions; developing strategies to manage and restore natural disturbances in wilderness ecosystems.
- Understanding effects of alien species and their management in wilderness.

The majority of the Institute's efforts and resources will be focused on research addressing these Tier One issues. For each of the selected issues a systematic process will be employed to develop an agenda of high priority research topics.

Tier Two Priority Issues—These issues are also recognized as high priority, but for reasons of feasibility or expediency are not proposed for development into full research programs at this time. Aspects of these issues may be addressed as specific needs are identified and quality proposals presented. These issues may later be considered for full program development.

- Understanding effects of livestock and its management on wilderness ecosystems.
- Understanding relationships between wilderness and larger ecological systems.
- Understanding the role of wilderness in larger social systems.

Other Priority Issues—To be responsive to new needs or to creative ideas, a portion of the Institute's research funds will remain available for support of projects not initially identified as tier one or two priority. In addition, we will examine cross-cutting issues, such as the role of science in defining management objectives for wilderness. This includes understanding the meaning of naturalness and the usefulness of such concepts as range of natural variability and desired future conditions. We will also address the appropriateness of scientific and management activities within wilderness. All research endeavors will emphasize understanding the consequences of various management options.

Project Prioritization—All potential projects will be prioritized on the basis of (1) significance and importance of the topic to the understanding and protection of wilderness resources and values, and (2) the potential for the Leopold Institute to make a definitive contribution to the management or scientific issue. Input from scientists and managers will provide the basis for establishing project priorities. Actual selection of individual projects for funding will be based on the following criteria:

- Significance of the issue or resource.
- Severity of the threat, problem, or need.
- Potential to make significant contribution to knowledge.
- Potential for timely management application.
- Definition of the problem, objectives, and methods.
- Feasibility and probability of accomplishing objectives.
- Transferability of results to other situations.
- Cost effectiveness and potential for cost sharing or leveraging.

Cooperative and Partnership Activities

In carrying out both its research and applications functions, the Leopold Institute will work jointly with the science and management staffs of the Federal wilderness agencies. An interagency agreement to support operation of the Institute has been signed by the Forest Service (FS), Bureau of Land Management (BLM), National Park Service (NPS), Fish and Wildlife Service (FWS), and National Biological Service (NBS). Cooperative interagency activities will include identification of research needs and priorities, development and conduct of research programs and projects, and the application of research findings to management programs and policy issues.

Partnerships with academic and private institutions and programs play a critical role in the Institute's research efforts. In addition to collaborative research between Institute and university scientists, cooperative activities include exchange programs, support of visiting experts, sponsorship of lectures, workshops and symposia, and involvement in professional activities and societies. Mutually supportive relationships with professional societies and interest groups will also be developed.

Organizational Structure, Support, and Oversight

The ultimate success of the Aldo Leopold Wilderness Research Institute as an interagency effort in providing quality research that is responsive to management needs will depend on the staffing and funding provided by the participating agencies. The following staffing and funding levels have been agreed to by the Interagency Wilderness Steering Committee as a short-term target for assuring a modest though functional program.

Staffing

Target staffing levels (as agreed to by the Interagency Wilderness Steering Committee) are as follows:

Director—1.0 FTE (full time equivalent), FS

- Research Scientists—4.0 FTE, FS; 1.0 FTE, NBS
- Biologist/Ecologist/Analyst Support—2.0 FTE, FS; 1.0 FTE, NBS

Assistant Director, Applications—1.0 FTE, FS

- Applications/Information Specialists—0.5 FTE, FS; 1.0 FTE, NPS; 1.0 FTE, BLM/FWS

Administrative Assistant—1.0 FTE, FS

- Secretary—0.5 FTE, FS

Data Manager—1.0 FTE, FS

The target staffing level is 15 permanent FTE's with at least four of these coming from the Department of the Interior Bureaus. Fiscal year 1996 staffing included seven FTE's, all Forest Service positions. In August 1996, the National Biological Service (scheduled to become the Biological Resources Division of the U.S. Geological Survey in Fiscal Year 1997) permanently stationed a Research Zoologist at the Leopold Institute. This is the first Department of the Interior employee to become a member of the Institute staff. The National Park Service and Bureau of Land Management are exploring options for physically locating staffs at the Institute.

Fiscal Year 1996 permanent staffing:

- Institute Director
- Research Biologist
- Research Ecologist
- Research Social Scientist
- Biologist
- Social Science Analyst
- Program Assistant
- Research Zoologist staffed by the National Biological Service in the August of 1996

Currently, other than the new National Biological Service Zoologist, these are all Forest Service positions. The Director is the only new position to be developed as a result of creation of the Institute. For the Leopold Institute to meet the expectations established by its formation, it will be essential that the supporting agencies become fully involved, including commitments of staff and support funding.

Budget

Short-term (FY 98) goals for project funding (in addition to permanent salaries and support) by the signatory agencies are as follows:

Research—

	FY 98 target	FY 96 baseline
Forest Service	\$750,000	\$225,000
Bureau of Land Management	50,000	50,000
National Park Service	50,000	0
Fish and Wildlife Service	50,000	0
National Biological Service	50,000	0

Applications—No specific funding had been made available for the applications program as of FY 96.

	FY 98 target
Forest Service	\$50,000
Bureau of Land Management	25,000
Fish and Wildlife Service	25,000
National Park Service	25,000

These target staffing and funding levels would permit an effective and efficient approach to acquire and provide research information on the

highest priority wilderness management needs. They would provide for multidisciplinary approaches to the top tier research priorities, as well as initiation of the applications program. Support required for full operation of all Institute programs, including more equal participation by the Department of the Interior agencies, will be developed by the Steering Committee.

Oversight

The five signatory agencies of the Interagency Agreement supporting the Aldo Leopold Wilderness Research Institute established an Interagency Wilderness Steering Committee to provide oversight and broad, national, strategic direction to both the Institute and the Arthur Carhart National Wilderness Training Center. The Steering Committee, consisting of two members from each agency, is expected to provide advocacy and validation for Institute programs. Specifically, it is expected to coordinate communication with agency field personnel regarding information needs, provide contacts within each agency on specific projects, provide feedback on proposed research programs, help establish broad research priorities, provide guidance regarding future development of the Institute, and transmit Institute budget and staffing needs to agency officials and ensure their consideration in budget deliberations. The Committee meets twice a year.

Implementation Strategies

Implementation of the programs and functions outlined in this plan depends on the full involvement of each of the wilderness agencies. In signing the Interagency Agreement, each agency agreed to "cooperate in the development" of the Aldo Leopold Wilderness Research Institute. Forest Service and Institute staffs have developed a program structure and objectives that assume the full cooperation, including shared staffing and funding, of each of the signatory agencies. However, in recognition of the tight fiscal atmosphere under which all Federal agencies expect to operate in coming years, it is recognized that optimal funding may not be realistic for all agencies. Thus, rather than lay out a detailed scenario or strategy for implementation of the various program components and objectives, we have chosen to leave the details of programs and scheduling to be developed as funding levels and sources become clearer. The Steering Committee, Institute staff, and contributing agencies will all be involved in setting priorities and making decisions.

Strategic Challenges

A number of programmatic-level issues present challenges to full development of the Aldo Leopold Wilderness Research Institute and its programs. These challenges generally involve the balancing of conflicting demands and priorities.

Strategic Versus Tactical Research

The Leopold Institute will strive to achieve a balance between short-term tactical and longer term strategic research. There will always be pressure to emphasize short-term studies that have immediate management application. Yet such research is often too late and too little to help in resolving the

immediate problem. In developing its research agenda, the Institute will balance the demand for results requiring immediate application with longer term, strategic research on understanding of processes and mechanisms.

Breadth Versus Depth

The Leopold Institute strives for a balance between breadth and depth in our research programs. In an effort to maximize productivity and applicability, much of the Institute's efforts and resources will be concentrated on a selected number of priority issues for which we will strive to provide leadership in developing interdisciplinary research programs. This will include individual staff research, cooperative or contract studies, and leadership in formulating teams of scientists to address the selected issues. At the same time, we recognize the importance of maintaining a certain amount of both breadth and opportunism in Institute programs. To accomplish this we will continue to support individual projects beyond the priority issues that address priority wilderness information needs.

Applied Research Versus Basic Research

We believe the distinction between basic and applied research as it relates to wilderness is largely artificial. We are committed to assuring that all research supported by the Institute will be applied in the sense that it addresses either short-term, immediate management or planning applications or longer term, anticipatory understanding of basic wilderness attributes or threats to those attributes that may have application potential.

Local Versus Regional Versus National Emphasis

We are very much aware of the temptations of focusing research efforts on site-specific issues because they are more convenient and often less expensive. The Leopold Institute will give priority to addressing research questions that have national or regional applicability. International application of programs will also be considered.

Stability Versus Flexibility

One of the most important attributes of agency science is its ability to encourage interdisciplinary, team approaches to natural resource issues. Such an approach forms the basis of our concept of priority issues. It enables multiple, integrated projects to address complex issues. However, while beneficial in developing long-term, continuous data sets, such an approach can also tie up funds, making it difficult to be responsive to new issues and needs that are impossible to anticipate. The Leopold Institute is committed to balancing the support of multiple projects on a limited number of priority issues while maintaining flexibility to initiate new projects or to be responsive to creative ideas.

Research Versus Applications

The research mandate that led to the establishment of the Leopold Institute is paired with the goal of developing an "Applications" function that will advance communication between wilderness research and management. Although Leopold Institute scientists have long been recognized for the time

they give to the application and transfer of their research, it is understood that the applications function of the Institute can only be fully developed as new staff and funding are provided. As new funding becomes available, the Institute will strive to balance its research program with an equally active and effective applications branch. At the same time, the Institute is committed to maintaining and improving the quality and credibility of its scientific research program.

Expectations Versus Capabilities

Establishment of the Leopold Institute as an interagency entity to conduct and coordinate research, as well as apply research findings to the management issues faced by five wilderness agencies, has created a significant gap between expectations (of both scientists and research users) and the capabilities of the Institute to meet expectations. Expectations that the Institute should be responsive to needs and inquiries must be tempered by the realization that to date there has been little expansion of capabilities beyond those for a typical Forest Service Research Work Unit. Anticipated increases in funding and staff will enable the program to gradually overcome these limitations.

Role of the Scientist

The research scientists on the Leopold Institute staff will need to continually balance conflicting demands on their time. These conflicts include designing and conducting research, brokering or administration of research, facilitation of information exchange, applications of research findings (through technology transfer and other science-management interface activities), and involvement in other professional activities (for example, conference, committee, editorial, and society activities). Each of these demands is critically important to the success of the Institute and to the stature of the scientist. And whereas it is impossible to provide strict guidelines for allocation of the scientist's time between such activities, it is recognized and expected that the successful scientist will be actively involved in all of them. The effective balancing of these often conflicting demands will be a goal of each Institute scientist. Scientific quality and professional credibility must be the paramount goal.

Acknowledgments

The strategic planning process that led to development of this Strategic Plan was carried out over the better part of a year. Beginning in late 1994, we solicited suggestions, input, and advice from a variety of individuals both familiar with and interested in wilderness research, the Leopold Institute, and the strategic planning process. This input was then used by the Institute staff to develop multiple drafts of this document. Draft versions of the plan were reviewed by the Interagency Wilderness Steering Committee as well as other interested individuals. We thank all of those who provided input, whether it was in the form of stimulating ideas or detailed review comments.